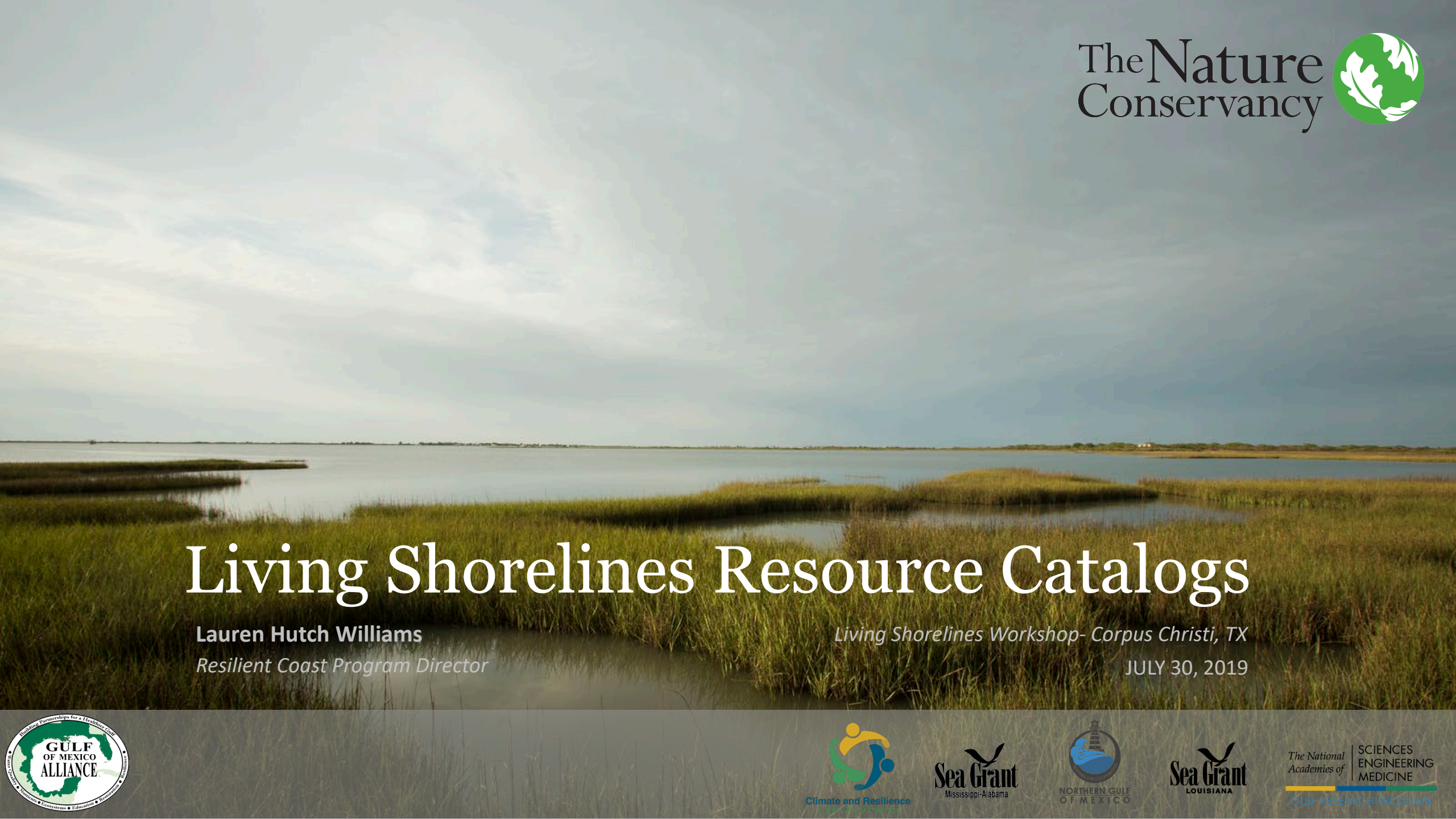


Living Shorelines Resource Catalogs

Lauren Hutch Williams
Resilient Coast Program Director

Living Shorelines Workshop- Corpus Christi, TX
JULY 30, 2019

Where it all began..

Climate and Resilience
COMMUNITY OF PRACTICE

Project Team

- Tracie Sempier, Mississippi-Alabama Sea Grant Consortium and Gulf of Mexico Alliance
- Melissa Daigle, Louisiana Sea Grant College Program
- Katie Lea, Louisiana Sea Grant College Program

Green Infrastructure Working Group Coordinators

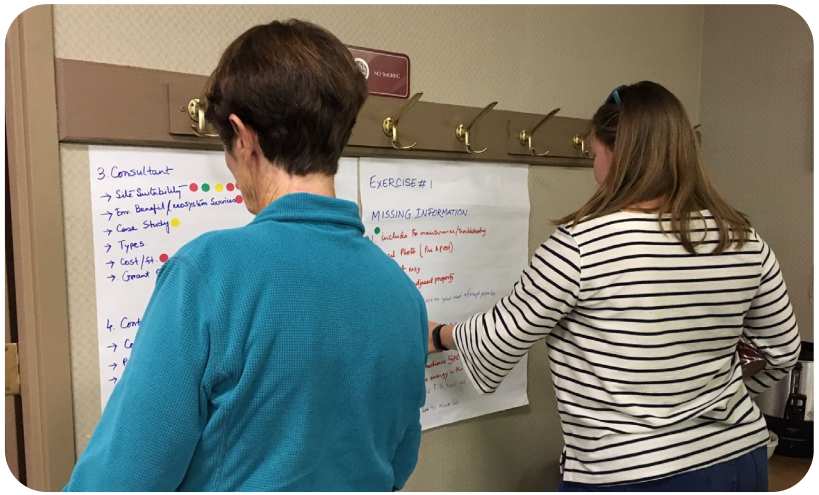
- Renee Collini, Northern Gulf of Mexico Sentinel Site Cooperative and Mississippi State University
- Amy Gohres, Northern Gulf of Mexico Sentinel Site Cooperative
- Casey Fulford, Baldwin County Soil and Water Conservation District *(not pictured)*





Green Infrastructure Working Group

- **Over 30 members** from all Gulf states
  - Academics
  - Community representatives
  - Extension and outreach professionals
- Developed the resource catalog idea
- Built extensive repository of living shoreline resources



Project Outputs

- 5 Resource catalogs (one per Gu
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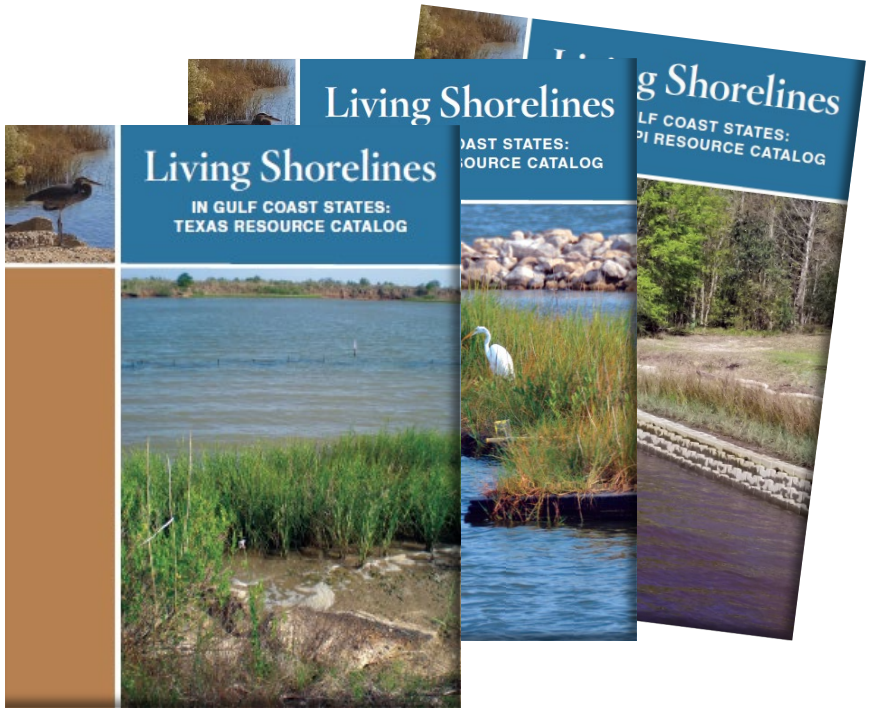

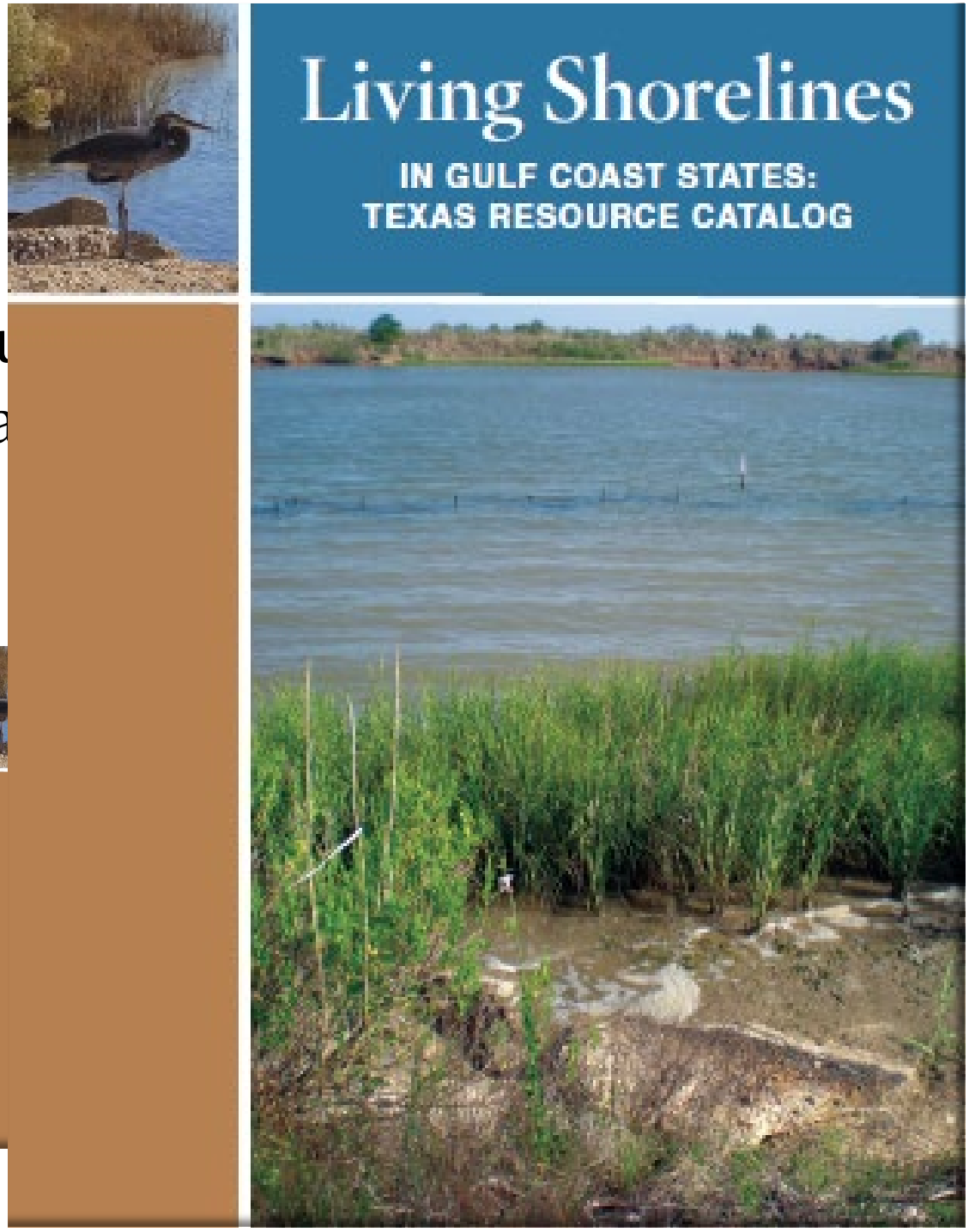

Purpose of this Resource Catalog

Living shorelines, or natural approaches to shoreline stabilization, have been increasingly recognized as an effective way to not only stabilize shorelines, but also provide numerous other benefits, including improvements in recreational fishing and birdwatching. This catalog was created to highlight resources that have been developed to inform coastal living shoreline project implementation in U.S. Gulf States. By compiling these available resources, we aim to help direct different key audiences

- **Environmental Consultants, Engineers, and Landscape Architects**
- **Installation contractors and suppliers**
- **Realtors and property developers**
- **Researchers**
- **Resource Managers and Local Land Use Planners**
- **Property Owners**
- **All** – *For resources relevant to all target audiences*

Cost $

Cost is an important factor to consider before planning a living shoreline project. Costs can vary based on project size, location, and technique(s). Resources outlined in this section provide information related to the cost (and potential benefits) of living shoreline projects in Texas.

Implementation Costs (design, permitting, material, construction, & maintenance)

Title: Living Shorelines: A Natural Approach to Erosion Control

Resource Type: Guidance Handbook

By: Galveston Bay Foundation (2014)

Audience(s): Property owners

Description: Price estimates of various materials used for traditional shoreline armoring and living shorelines are provided in Tables 2-4.

See also: More information in Design and Construction and Permitting sections

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This catalog is organized into three primary sections highlighting resources relevant to the (1) design and construction considerations, (2) permitting, and (3) costs of living shoreline projects. The focus of this catalog (and thus the resources included) is coastal environments, those impacted by tidal waters. A brief description of each resource is included, along with information about the type of resource, topics covered, and target audiences. When you identify a resource of interest, follow the link provided to view the original resource. While this catalog was compiled for Texas, resources developed for other states have been included when the information is highly applicable to Texas. Some resources are included in more than one section when they contain information relevant to multiple sections.

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Title: **Living Shorelines: A Technical Guide for Contractors in Alabama and Mississippi**

Resource Type: Guidance Handbook

By: Bryars et al. (2016)

Audience(s): Installation contractors and suppliers; Environmental consultants, engineers, and landscape architects

Description: A comparison between conventional armoring and living shoreline approaches is provided on page 8. Table 3 lists the various ecosystem services, or benefits, provided by living shoreline and traditional structural techniques. On the same page, before and after photos of two properties impacted by Hurricane Irene are shown, one protected with a living shoreline and the other protected with a bulkhead.

See also: More information in Design and Construction section

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- **Design and Construction**
- **Permitting**
- **Cost $**
- **Case Studies**

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Key Facts about Texas

TIDAL SHORELINE[a]

3,359

MILES

HARDENED SHORELINE[b]

20%

LIVING SHORELINE[c]

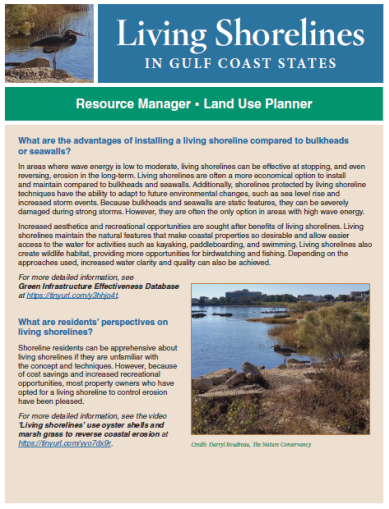
25

PROJECTS

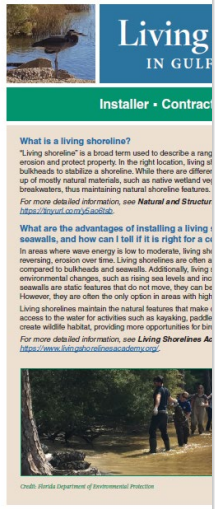
a Shoreline mileage includes offshore islands, sounds, bays, rivers, and creeks to the head of tidewater or to a point where tidal waters narrow to a width of 100 feet
b Gittman, RK, FJ Fodrie, AM Popowich, DA Keller, JF Bruno, CA Currin, CH Peterson, and MF Piehler (2015) Engineering away our natural defenses: an analysis of shoreline hardening
c Arkema, KK, SB Scyphers, and C Shepard (2017) Living shorelines for people and nature

Project Outputs

- ✓ 5 Resource catalogs (one per Gul
  - *Guidance on currently availab*
- 5 Audience-specific two-pagers
  - *Links resource catalogs to cor*


Living Shorelines
IN GULF COAST STATES
Resource Manager • Land Use Planner
What are the advantages of installing a living shoreline compared to bulkheads or seawalls?
What are residents' perspectives on living shorelines?


Living Shorelines
IN GULF COAST STATES
Environmental Consultant • Engineer • Landscape Architect
What are the advantages of installing a living shoreline compared to bulkheads or seawalls?
What are the latest living shoreline techniques and innovations?


Living
IN GULF
Installer • Contract
What is a living shoreline?

Living Shorelines
IN GULF COAST STATES

Resource Manager • Land Use Planner

What are the advantages of installing a living shoreline compared to bulkheads or seawalls?

In areas where wave energy is low to moderate, living shorelines can be effective at stopping, and even reversing, erosion in the long-term. Living shorelines are often a more economical option to install and maintain compared to bulkheads and seawalls. Additionally, shorelines protected by living shoreline techniques have the ability to adapt to future environmental changes, such as sea level rise and increased storm events. Because bulkheads and seawalls are static features, they can be severely damaged during strong storms. However, they are often the only option in areas with high wave energy.

Increased aesthetics and recreational opportunities are sought after benefits of living shorelines. Living shorelines maintain the natural features that make coastal properties so desirable and allow easier access to the water for activities such as kayaking, paddleboarding, and swimming. Living shorelines also create wildlife habitat, providing more opportunities for birdwatching and fishing. Depending on the approaches used, increased water clarity and quality can also be achieved.

For more detailed information, see ***Green Infrastructure Effectiveness Database*** *at https://tinyurl.com/y3hhjo4t.*

What are residents' perspectives on living shorelines?

Shoreline residents can be apprehensive about living shorelines if they are unfamiliar with the concept and techniques. However, because of cost savings and increased recreational opportunities, most property owners who have opted for a living shoreline to control erosion have been pleased.

For more detailed information, see the video ***'Living shorelines' use oyster shells and marsh grass to reverse coastal erosion*** *at https://tinyurl.com/yyo7dx9r.*

Credit: Darryl Boudreau, The Nature Conservancy

Living Shorelines
IN GULF COAST STATES

Resource Manager • Land Use Planner

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How can I tell if a site is suitable for a living shoreline, and how much does installation cost?

In areas where wave energy is low to moderate, living shorelines can be effective at stopping, and even reversing, erosion in the long-term. However, bulkheads and seawalls are often the only option in areas with high wave energy. The cost and amount of work involved in the installation of living shorelines varies depending on site conditions, size of project, and techniques and materials used. Cost-share programs and other financial incentives have been implemented in some areas to help pay for living shoreline projects.

For more detailed information, see ***Living Shorelines Academy*** *at https://www.livingshorelinesacademy.org/.*

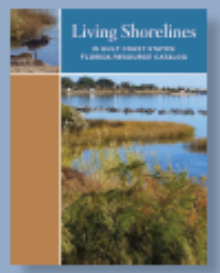
What is the process and timeline for design, permitting, and construction of a living shoreline?

Permitting a living shoreline requires a joint application through the U.S. Army Corps of Engineers and the state agency that manages state-owned submerged lands. Generally, you can submit a joint application through your state agency. The amount of time to process and approve a permit, and to design and construct a project, varies by state and project type and size.

For more details, including general information that applies in any state, see ***Living Shorelines: A Guide for Alabama Property Owners*** *at https://tinyurl.com/yy6v5o59.*

More resources can be found in the **Living Shorelines Resource Catalog** for your state. Visit www.gulflivingshorelines.com.

The Living Shorelines Resource Catalogs for Gulf Coast states were created to direct different audiences to the most helpful resources related to living shoreline design, construction, permitting, and cost.



Project Outputs

- ✓5 Resource catalogs (one per state)
  - Guidance on currently available resources
- ✓5 audience-specific two-pagers
  - Links resource catalogs to common FAQs
- 3 PSA videos
  - Highlighting the benefits of living shorelines and the resource catalogs for property owners, contractors, and environmental consultants

www.GulfLivingShorelines.com

Contributing Organizations

Apalachicola National Estuarine Research Reserve
Baldwin County Soil and Water Conservation District
Choctawhatchee Basin Alliance
Climate and Resilience Community of Practice
Dauphin Island Sea Lab
Florida Department of Environmental Protection
Florida Fish and Wildlife Conservation Commission
Gulf of Mexico Alliance
Louisiana Sea Grant
Mississippi-Alabama Sea Grant Consortium
Mission Aransas National Estuarine Research Reserve
Mississippi Department of Marine Resources
Mississippi State University Extension
National Academies of Sciences, Engineering, and Medicine Gulf Research Program
National Oceanic and Atmospheric Administration
National Wildlife Federation
Northern Gulf of Mexico Sentinel Site Cooperative
Nueces County
Tampa Bay Estuary Program
Texas A&M University Corpus Christi Harte Research Institute
The Nature Conservancy
The University of Texas at Austin Marine Science Institute
The University of Southern Mississippi
U.S. Fish and Wildlife Service
Weeks Bay National Estuarine Research Reserve

Thank you!

Lauren.williams@tnc.org